IN THE CLAIMS

1. (Cancelled)

2. (Previously Presented) The electrochemical cell system of claim 21, wherein the porous flow field member comprises a porous support integrated with a polymer or a combination of a polymer and an electrically conductive material.

3-4. (Cancelled)

5. (Original) The electrochemical cell system of claim 2, wherein the polymer is selected from the group consisting of a hydrophobic polymer, a hydrophilic polymer, and a hydrophilic/hydrophobic polymer mixture.

6. (Original) The electrochemical cell system of claim 5, wherein the hydrophobic polymer is selected from the group consisting of polytetrafluoroethylene, fluorinated ethylene propylene, polyvinylidinefluoride, ethylene chlorotrifluoroethylene copolymer, ethylene tetrafluoroethylene, perfluoroalkoxy, tetrafluoroethylene perfluoromethylvinylether copolymer, and mixtures comprising at least one of the foregoing hydrophobic polymers.

7. (Original) The electrochemical cell system of claim 5, wherein the hydrophilic polymer is selected from the group consisting of proton conductive ionomers and ion exchange resins.

8. (Currently Amended) An electrochemical cell system, comprising:

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a porous support having a graded hydrophobicity, a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity, wherein the porous flow field member comprises ~~a porous support integrated with a polymer or~~ a combination of a polymer and an electrically conductive material, and wherein the electrically conductive material is selected from the group consisting of niobium, zirconium, tantalum, titanium, steel, nickel, cobalt, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

9. (Currently Amended) The electrochemical cell system of claim 2,

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a porous support;

wherein the porous support has a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity, and wherein the porous support is integrated with a polymer or a combination of a polymer and an electrically conductive material, wherein the polymer is an elastomer, and wherein the elastomer is threaded, woven, or stitched within the porous support; and

wherein the porous support is a screen, a perforated sheet, a pierced sheet, a sintered metal cloth, an etched sheet, a felt, or a woven mesh comprising a material selected from the group consisting of niobium, zirconium, tantalum, titanium, nickel, cobalt, steel, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

10-14. (Cancelled)

15. (Previously Presented) An electrochemical cell system, comprising:

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the flow field member comprises a porous support having a selected hydrophobicity, a selected hydrophilicity, a combination of a selected hydrophobicity and selected porosity, or a combination of a selected hydrophilicity and selected porosity,

wherein the porous flow field member comprises a first layer comprising a first layer having a first hydrophobicity, and a second layer having a second, different hydrophobicity, wherein the first layer has a first porosity and the second layer has a second, different porosity.

16. (Previously Presented) The electrochemical cell system of claim 15, wherein the first layer comprises a porous support integrated with an elastomeric material, and the second layer comprises a screen.

17. (Original) The electrochemical cell system of claim 15, wherein the first layer comprises a porous support integrated with an elastomeric material, and the second layer comprises a sintered metal cloth.

18. (Currently Amended) An electrochemical cell system, comprising: ~~The electrochemical cell system of claim 21,~~

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a porous support having a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity, and wherein the porous flow field member further comprises a catalyst; and

wherein the porous support is a screen, a perforated sheet, a pierced sheet, a sintered metal cloth, an etched sheet, a felt, or a woven mesh comprising a material selected from the group consisting of niobium, zirconium, tantalum, titanium, nickel, cobalt, steel, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

19. (Original) The electrochemical cell system of claim 18, wherein the catalyst is selected from the group consisting of platinum, palladium, rhodium, carbon, gold, tantalum, tungsten, ruthenium, iridium, osmium, alloys comprising at least on the foregoing materials, and mixtures comprising at least one of the foregoing catalysts.

20. (Previously Presented) The electrochemical cell system of claim 21, wherein the porous support comprises a material that is non-oxidizable at anodic potentials of less than about 4 volts.

21. (Previously Presented) An electrochemical cell system, comprising:

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a porous support having a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity; and

wherein the porous support is a screen, a perforated sheet, a pierced sheet, a sintered metal cloth, an etched sheet, a felt, or a woven mesh comprising a material selected from the group consisting of niobium, zirconium, tantalum, titanium, nickel, cobalt, steel, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

22. (Currently Amended) An electrochemical cell system, comprising:

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a first porous support having a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity; and

a second porous support contacting the first porous support and having a greater void volume than the first porous support, and a third porous support contacting the second porous support on a side of the second porous support opposite the first porous support, and having a greater void volume than the second porous support.

23. (Previously Presented) The electrochemical cell system of claim 22, wherein each of the porous supports is integrated with an elastomeric material.

24. (Original) The electrochemical cell system of claim 23, wherein the elastomeric material further comprises an electrically conductive material.

25. (Currently Amended) An electrochemical cell system, comprising:

a first electrode;

a second electrode;

a membrane disposed between and in intimate contact with the first electrode and the second electrode;

a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane;

a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side; and

a porous flow field member in fluid communication with the first flow field, wherein the porous flow field member comprises a first porous support having a graded hydrophilicity, a combination of a graded hydrophobicity and graded porosity, or a combination of a graded hydrophilicity and graded porosity;

a second porous support contacting the first porous support and having a greater void volume than the first porous support, and

a third porous support contacting the second porous support on a side of the second porous support opposite the first porous support, and having a greater void volume than the second porous support,

wherein each of the porous supports is integrated with a polymeric material, wherein the polymeric material comprises an electrically conductive particulate material selected from the group consisting of copper, silver, silver-coated spheres, niobium, zirconium, tantalum, titanium, steel, nickel, cobalt, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

26-50. (Cancelled)

51. (Previously Presented) In an electrochemical cell comprising a first electrode; a second electrode; a membrane disposed between and in intimate contact with the first electrode and the second electrode; a first flow field in fluid communication with the first electrode, wherein the first electrode is disposed on a first side of the membrane; a second flow field in fluid communication with the second electrode, wherein the second electrode is disposed on a second side of the membrane opposite the first side, a method for managing fluid flow comprises

introducing a quantity of fluid into the first flow field;

passing the fluid through a graded, porous flow field member in fluid communication with the first flow field, wherein the flow field member comprises a porous support having a graded hydrophilicity, a graded hydrophobicity, a combination of a graded hydrophilicity and a graded porosity, or, a combination of a graded hydrophobicity and a graded porosity; and

contacting the fluid with the first electrode;

wherein the porous flow field member comprises a first porous support having a first void volume, a second porous support having a second, different void volume, and a third porous support having a third, different void volume, wherein the first void volume is greater than the second void volume, and the second void volume is greater than the third void volume.

52-56. (Cancelled)

57. (Previously Presented) The electrochemical cell system of claim 8, wherein the electrically conductive material is selected from the group consisting of niobium, zirconium, tantalum, titanium, cobalt, mixtures comprising at least one of the foregoing materials, and alloys comprising at least one of the foregoing materials.

58. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises niobium.

59. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises zirconium.

60. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises tantalum.

61. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises titanium

62. (Previously Presented) The electrochemical cell system of claim 57, wherein the electrically conductive material comprises cobalt.

63. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises niobium.

64. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises zirconium.

65. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises tantalum.

66. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises titanium

67. (Previously Presented) The electrochemical cell system of claim 21, wherein the electrically conductive material comprises cobalt.